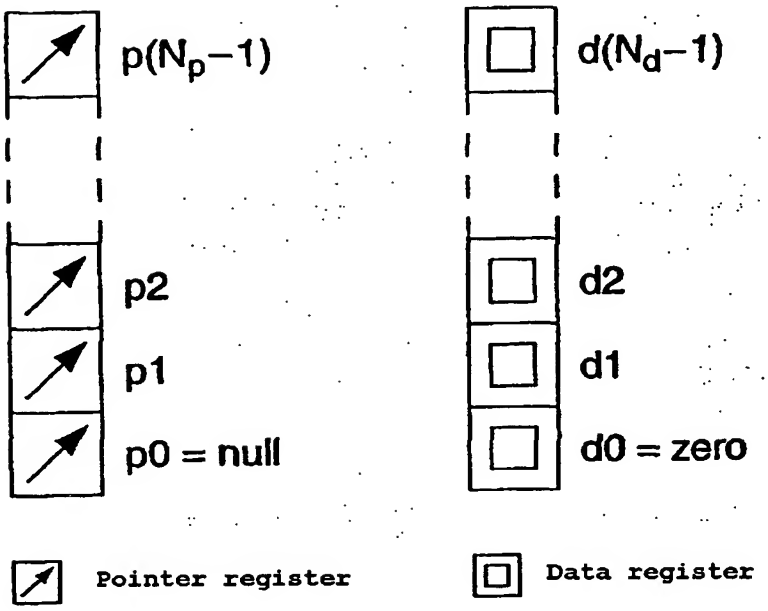
p(Np−1)
p2
p1
p0 = null
d(Nd−1)
d2
d1
d0 = zero
Pointer register
Data register

Fig. 1

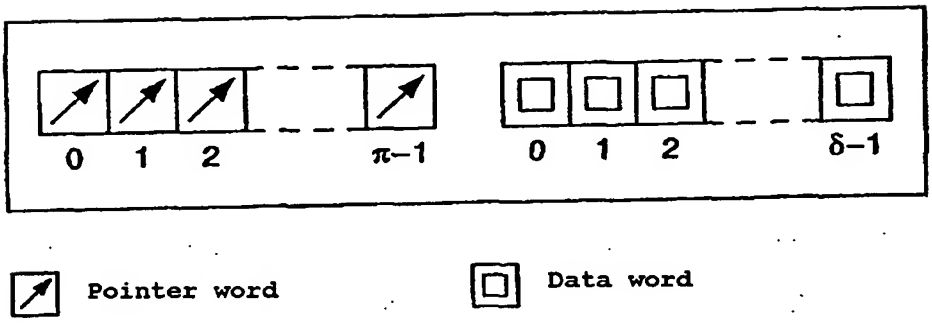
0
1
2
π−1
0
1
2
δ−1
Pointer word
Data word

Fig. 2

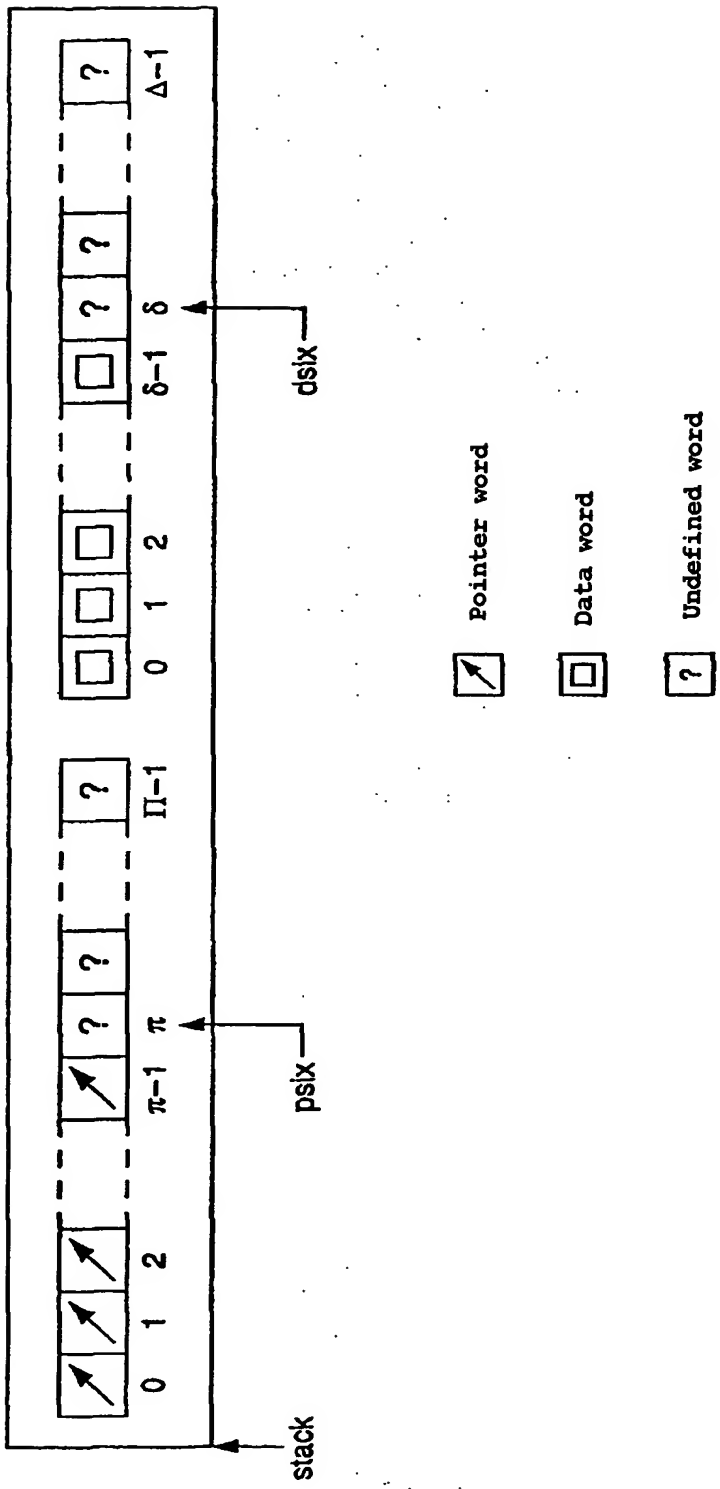
0 1 2
π-1 π
Π-1
0 1 2
δ-1 δ
Δ-1
stack
psix
dsix
Pointer word
Data word
Undefined word

Fig. 3

Commands which read the pointer register			
store pointer	(store pointer)	sp	py[index] := pz
copy pointer	(copy pointer)	cpp	px := pz
compare pointers	(compare pointers)	cmpp	dx := py,pz

Commands which write the pointer register			
allocate object	(allocate object)	alc	px := dy,dz
load pointer	(load pointer)	lp	px := py[index]
copy pointer	(copy pointer)	cpp	px := pz
create const. pointer	(create const. pointer)	ccp	px := dy

Commands which dereference the pointer register			
load data	(load data)	ld	dx := py[index]
load pointer	(load pointer)	lp	px := py[index]
store data	(store data)	sd	py[index] := dz
store pointer	(store pointer)	sp	py[index] := pz
read π attribute	(read π-attribute)	pattr	dx := py
read δ attribute	(read δ-attribute)	dattr	dx := py

dx, dy, dz	data register
px, py, pz	pointer register
index	expression for type of indexing

Fig. 4

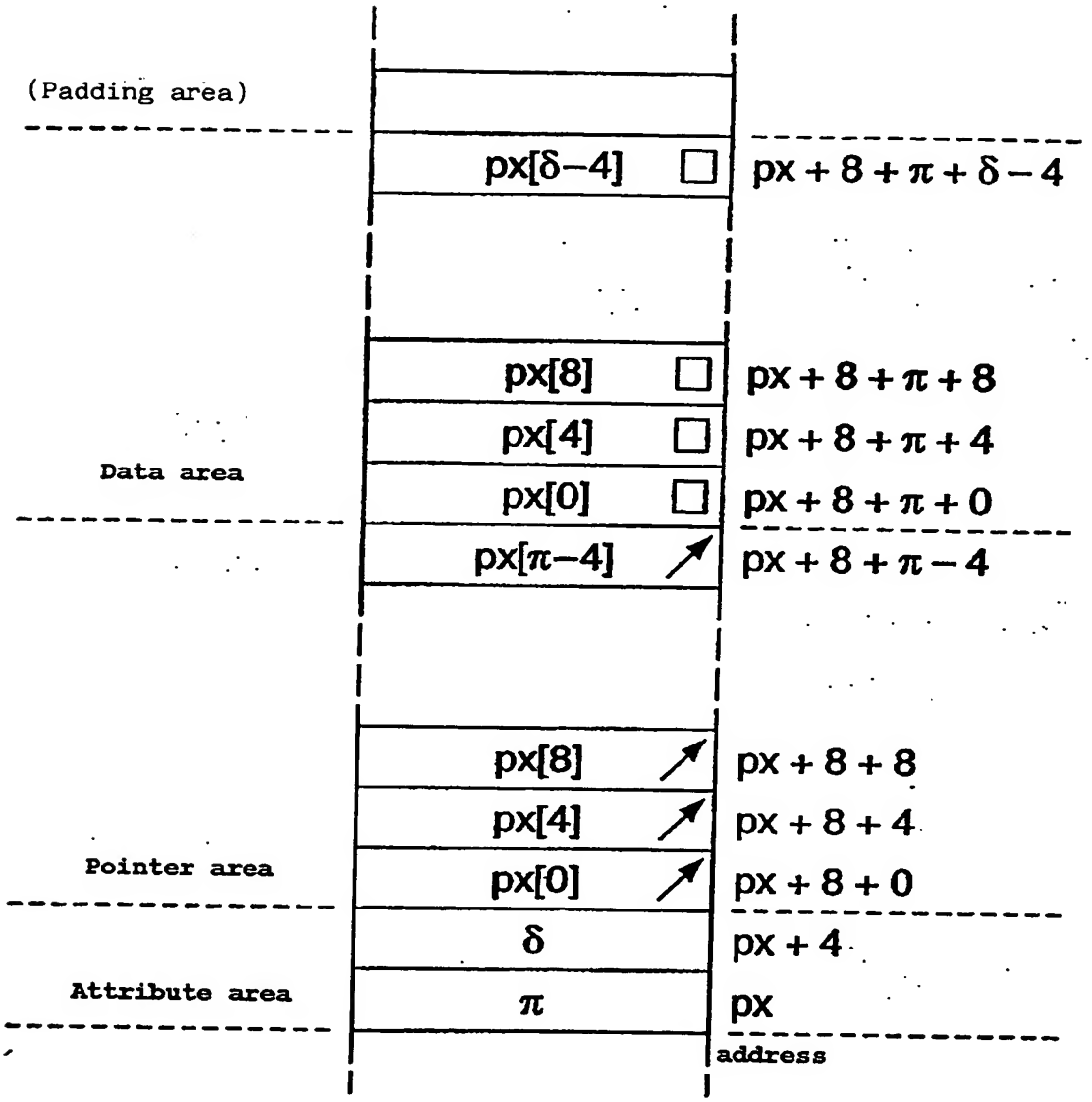
(Padding area)
px[δ−4]
px + 8 + π + δ − 4
px[8]
px + 8 + π + 8
px[4]
px + 8 + π + 4
Data area
px[0]
px + 8 + π + 0
px[π−4]
px + 8 + π − 4
px[8]
px + 8 + 8
px[4]
px + 8 + 4
Pointer area
px[0]
px + 8 + 0
δ
px + 4
Attribute area
π
px
address

Fig. 5

px
φx
πx
δx

Fig. 6

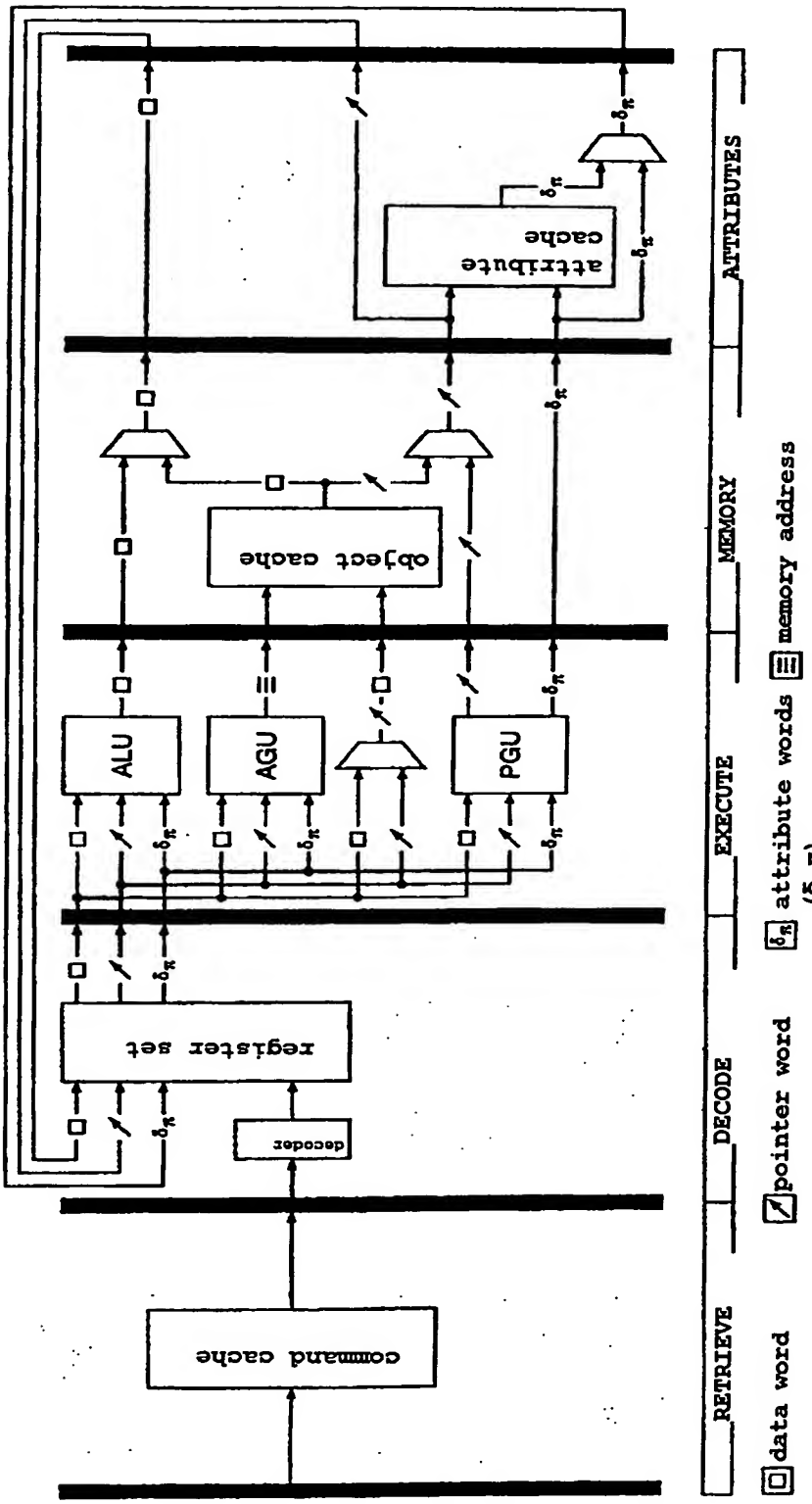
command cache
decoder
register set
ALU
AGU
PGU
object cache
attribute cache
RETRIEVE
DECODE
EXECUTE
MEMORY
ATTRIBUTES
data word
pointer word
attribute words
(δ,π)
memory address

Fig. 7

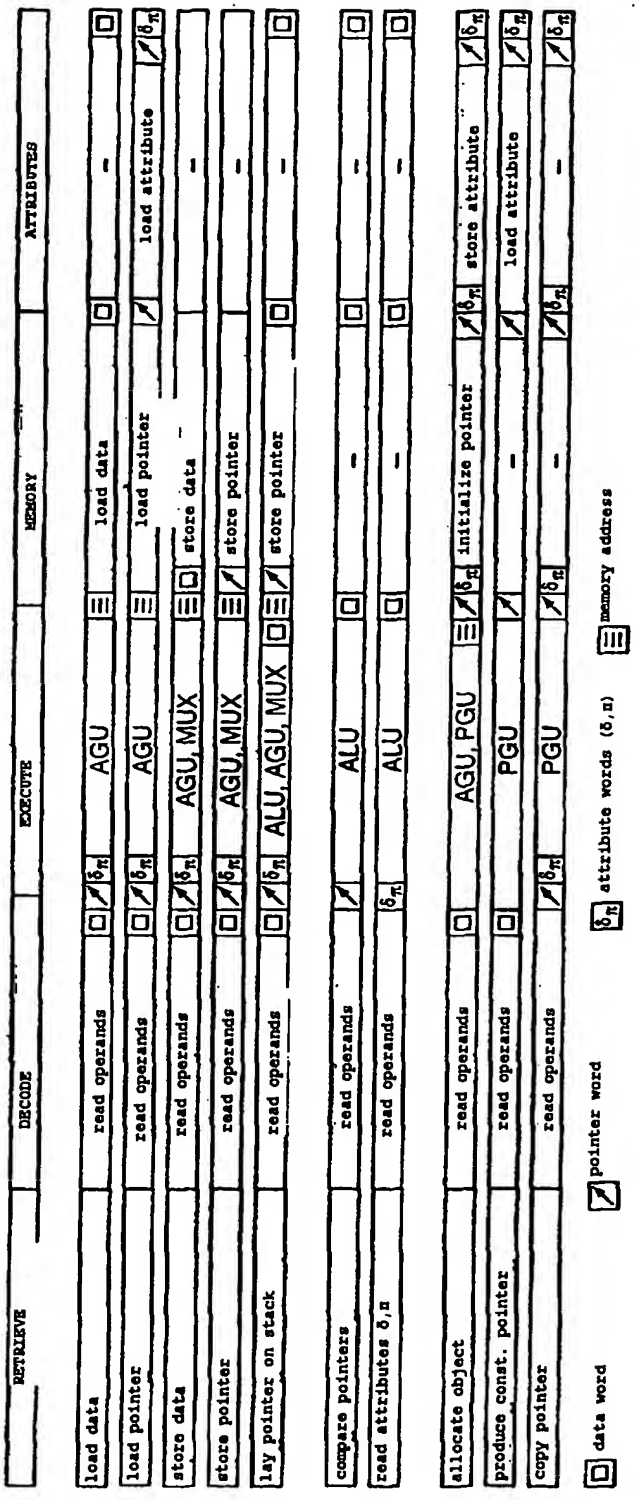
RETRIEVE
DECODE
EXECUTE
MEMORY
ATTRIBUTES
load data
read operands
AGU
load data
load pointer
read operands
AGU
load pointer
load attribute
store data
read operands
AGU, MUX
store data
store pointer
read operands
AGU, MUX
store pointer
lay pointer on stack
read operands
ALU, AGU, MUX
store pointer
compare pointers
read operands
ALU
read attributes δ,n
read operands
ALU
allocate object
read operands
AGU, PGU
initialize pointer
store attribute
produce const. pointer
read operands
PGU
load attribute
copy pointer
read operands
PGU
data word
pointer word
attribute words (δ,n)
memory address

Fig. 8

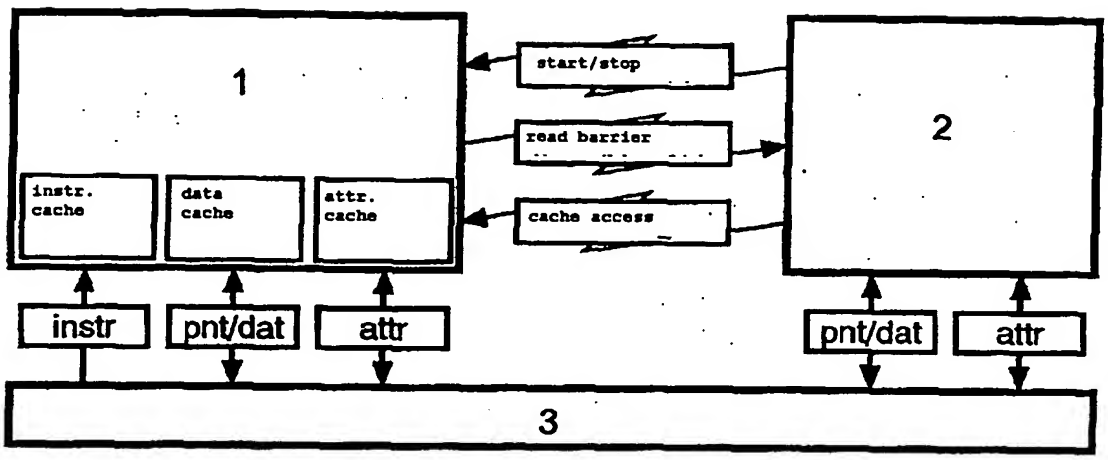
1
2
3
start/stop
read barrier
cache access
instr. cache
data cache
attr. cache
instr
pnt/dat
attr
pnt/dat
attr

Fig. 9